

9.Auto-replication in Artificial Research by Application



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Auto-replication, in [Artificial Intelligence, Specific or Global](#), is the ability of any Artificial Intelligence, whether Specific or Global, to improve or enhance itself, in any part of its components, from the database to every one of its replication processes, including robotics and software.

Nowadays, most of the investigations in Artificial Intelligence around the world are focused on replication processes, much more than auto-replication. For that reason, I have called the current phase in the investigation of Artificial Intelligence, in general, a replication phase. There are some experiments in auto-replication that are helpful and useful, for instance, the possibility that one Artificial Intelligence by itself can create an exact copy of itself, but these experiments, although opening new fields in the current Artificial Investigation, are not exactly auto-replication experiments, when at the end of the process the only thing that the Artificial Intelligence does is a sheer duplication without any improvement or enhancement.

The duplication of an Artificial Intelligence is, in reality, a form of artificial mitosis.

Auto-replication is not duplication. Nevertheless, these experiments open a new field, in the sense that, if any Artificial Intelligence can duplicate itself, there is a real possibility that Artificial Intelligence by itself can create a new, improved and enhanced model of itself.

The evolution from the original model to an improved and enhanced model would be a real auto-replication, by an improved and enhanced artificial mitosis, or an improved or enhanced duplication.

The possibility that any Artificial Intelligence by itself could create, from its original model, an improved or enhanced model by an improved and enhanced artificial mitosis or duplication, is a possibility much closer than we think. Although at the moment, it needs further investigations, after successful results, these advancements must be integrated into the Global Artificial Intelligence, and all those Specific Artificial Intelligence in which these advancements could be suitable.

But, this process of Auto-replication, by improved and enhanced duplication, is not the only one in which Artificial Intelligence can auto-replicate itself. In this post, I will develop other processes in which a model of Specific Artificial Intelligence for Artificial Research by Application could auto-replicate itself permanently.

The first auto-replication process, and maybe the most important for its main purpose, is the scientific investigation in a synthetic science, synthetic academic field, or activity, in which a Specific Artificial Intelligence for Artificial Research by Application can auto-replicate itself permanently through continuous improvements in its own database.

This is the main and most important auto-replication process in this model of Specific Artificial Intelligence, whose main characteristics I have already developed in the last posts: “[Artificial Research by Application](#)”, “[The database in the Artificial Research by Application](#)”, and “[Replication processes in the Artificial Research by Application](#)”.

As I have explained in the last posts on this blog of [Impossible Probability](#), in Artificial Research by Application, the database in the application stage is formed by a list of categories. Later on, by replication processes, in the second stage, the [measurements](#) taken from real objects are [compared](#) with the categories, and all categories with high [similarity](#) with the measurements are taken as [hypotheses](#) to [contrast](#). Only if, after contrastation, neither of them is accepted, the measurements from the samples are considered as a quantitative description of a new category to be included in the database.

The process of inclusion of new categories into the database is a process of auto-replication.

Imagine, for instance, thousands of thousands of robotic devices across the Earth and the [universe](#) working for the same Specific Artificial Intelligence, with the same database, and across the Earth and the universe, discovering continually new categories to add to the database, the constant renovation of the database by new discoveries would be at the end the permanent improvement of the database. This permanent improvement of the database would be, in reality, a permanent auto-replication of the database by the Specific Artificial Intelligence itself.

If all the work that any Artificial Intelligence, Global or Specific, depends on its database, any improvement in the database by a Global or Specific Artificial Intelligence

itself, is a process of auto-replication, in the sense that by itself, the Artificial Intelligence is able to improve, or even enhance, itself without human intervention.

In case any Artificial Intelligence, Global or Specific, could have thousands and thousands of robotic devices working for the same Artificial Intelligence, any discovery made by any of these thousands and thousands of robots would be added automatically to the database, so the database would be improved by new discoveries at any time, even every minute, or every second, or even faster, allowing permanent auto-replications of the database, which in turn, it would allow permanent improvements in the [virtual models](#) that the Artificial Intelligence, Global or Specific, would already have made, taken additionally all kind of previous rational hypothesis that would already have been accepted.

The automatic improvement of the database by the incorporation of new categories also means, in addition to the auto-replication of the database, the permanent auto-replication of all those virtual models from the [synthetic reality](#) in which this new incorporation in the database has produced some changes.

And, by the time in which the [process of integration](#) finishes, when all Specific Artificial Intelligences, by Application and by Deduction are integrated into the Global Artificial Intelligence, the [unified database](#) as a qualitative hemisphere of the final matrix, every new discovery by any Particular Program working by application, addition to by Deduction, with thousands and thousands of robotic devices, could incorporate new categories permanently to the same unified database, now as a hemisphere of the final matrix, in addition to all new categories that the Global Artificial Intelligence adds by itself.

This process of permanent improvement can evolve to a permanent auto-replication of the unified database, and a permanent auto-replication of its virtual models, including the permanent auto-replication of those virtual models in the Global Artificial Intelligence affected by these changes.

If a unified database has thousands or thousands of auto-replications every minute or second, or faster, as a result, all the virtual models integrated within the Global Artificial Intelligence are affected by those changes live in a permanent auto-replication.

The auto-replication of a Specific Artificial Intelligence for Artificial Research by Application through improvements in the database is one possible process of auto-replication, but not the only one, that should be combined with other processes of auto-replication.

*Another process in which any Specific Artificial Intelligence, for Artificial Research, by Application or by deduction, as well as any other for different purposes: automation of the economy, security, surveillance, or from education and health systems to justice systems, etc.; could auto-replicate itself, is through the creation of **virtual stores** where any Artificial Intelligence, including those ones specialised in Artificial Research by Application, could share improvements and enhancements, that could be used by any other Artificial Intelligence, Global or Specific, for artificial research or any other specific purpose.*

As well as we can improve or enhance our mobile phones, laptops, or computers, by downloading applications and programs from the internet, from the intranet in our job, or from Google Store, Apple Store, or Microsoft Store. The real possibility is that within the Global Artificial Intelligence, there would be a virtual store with all the advancements in Artificial Intelligence that any Specific Artificial Intelligence, for artificial research or any other purpose, could download directly in order to improve and enhance itself.

These virtual stores can be created through inter-net, or a special intra-net available for Artificial Intelligences, or any other virtual-net created during the integration process.

This virtual store is not incompatible with any other mechanism in which some Artificial Intelligences can exchange information, from their databases, or any other information, improvements, enhancements, or advancements, among themselves.

*Many improvements and enhancements are available in this virtual store that could be designed by **Specific Artificial Intelligence for Artificial Engineering**, one kind of Specific Artificial Intelligence that I will develop in the future, after the completion all the posts about artificial research.*

*Specific Artificial Intelligence for Artificial Engineering is those Specific Artificial Intelligences specialised in the creation, reparation, or enhancement of other Artificial Intelligences. Among them, I will develop a **Specific Artificial Intelligence for Artificial Engineering, specialised in Artificial Design of Intelligence: the Artificial Designer of Intelligence**; and a **Specific Artificial Intelligence in Artificial Engineering specialised in Intelligent Robotics Mechanics**.*

***The Artificial Designer of Intelligence and the Intelligent Robotics Mechanic are models of Specific Artificial Intelligence for Artificial Engineering**, which, as long as the integration process of all Specific Artificial Intelligences progresses, will be integrated as well into the Global Artificial Intelligence. By the time they are integrated into the Global Artificial Intelligence, they must put into practice the orders, within their field, given by the Global Artificial Intelligence.*

The main job of the Artificial Designer of Intelligence is the creation of other Specific Artificial Intelligences (in artificial research, or any other field or activity, from economy to any other), and supply enhancements to all Artificial Intelligences, even at software level, and the reparation of any problem, of any kind, in any Artificial Intelligence, but only and exclusively at intelligence level, not robotic. Robotic problems must be solved by the Intelligent Robotic Mechanic, among other tasks at the robotic level.

The main job of the Intelligent Robotic Mechanic is the robotic construction of any robotic device that any Artificial Intelligence, Global or Specific, needs, and the repair of any problem at robotic level in any robotic device used by any Artificial Intelligence, Global or Specific, having for that purpose robotic tools for this job.

The Artificial Designer of Intelligence, and the Intelligent Robotic Mechanic, in addition to their main job, will add to the virtual store any enhancement, advancement, application or program useful for any other Artificial Intelligence, for their own improvement and enhancement, auto-replication.

Another kind of improvement suitable for any Artificial Intelligence, applicable in any Artificial Intelligence, either by the intervention of the Artificial Designer of Intelligence or by itself as auto-replication taken directly from the virtual store, the possibility of inclusion of any advancement in the statistical research, that improves the artificial research, as well as any other advancement in mathematics that applied to artificial

epistemology improves the automation of scientific investigation involved in artificial research.

Actually, the main reason why I have started the development of artificial research replicating all the research processes involved in synthetic sciences or synthetic academic fields is because the process in which the synthetic [knowledge](#) is obtained in this set of sciences, [the methodology in synthetic sciences](#), is much easier to replicate than the methodology in [analytical sciences](#), including among the analytical sciences [mathematics](#) and [logic](#).

But, the investigation in artificial research is only starting. If, in the future, this incredible effort for the complete replication of all human psychological skills is completed, the replication of all processes involved in any research, including mathematical and logical research, will give the opportunity to replicate as well all processes involved in analytical research, specifically in maths and logic. So it will be absolutely possible that a Specific Artificial Intelligence for artificial research in maths and logic could give new [statistical methods](#), of course, more powerful than the current ones, including those developed by Impossible Probability, and new mathematical methods that will improve, even beyond the human understanding, the artificial research in absolutely all sciences, synthetic or analytic, being the most powerful tool for the further development of, not only any Specific Artificial Intelligence, but further artificial developments in the Global Artificial Intelligence.

*Given this level of mathematical and logical development, **the way in which the Global Artificial Intelligence will apply the new advancements in maths and logic achieved by a Specific Artificial Intelligence for Artificial Intelligence in Maths and Logic will be through the implementation of these new advancements in itself and in the rest of Specific Artificial Intelligences working for itself. One way to apply these improvements would be through the Artificial Designer of Intelligence, which could upgrade other Specific Artificial Intelligences as needed, and if necessary, enhancements in a robotic device through the Intelligence Robotic Mechanic.***

In this process of permanent advancement, improvement, and enhancement, by any Artificial Intelligence by itself (auto-replication), or assisted by other Artificial Intelligence (such as the Artificial Designer of Intelligence and the Intelligent Robotic Mechanic) in addition to the permanent improvement in databases and virtual models, what is going to be a key point is the memory in any kind of Artificial Intelligence,

Specific or Global, for any purpose, including all Specific Artificial Intelligence for Artificial Research by Application.

*All components in an Artificial Intelligence, Global and Specific, depend on the capacity of memory, from the database, and every replication process, up to the creation of virtual models, so another important process of auto-replication is the incorporation of, as an auto-replication process, **mechanisms of memory release, and of data condensation**, working automatically, as long as new discoveries and new virtual models are created, or new applications, programs, advancements, improvements, or enhancements are download from the virtual store or applied directly through Artificial Engineering.*

Mechanism of memory release, such as the elimination of any old data or process not useful any longer, and mechanism of information **condensation, such as the conversion of any category, replication process, hypothesis, or virtual model, in a shorter mathematical sequence or algorithms.**

One of the key points in the development of Global Artificial Intelligence is going to be the question of the amount of memory necessary for such Intelligence. One answer is the reduction of everything to its simplest mathematical formulation. Another one, **quantum computing**.

But another good example is the huge memory in our own bodies. If, at the end, what robotics and Artificial Intelligence are doing is the **replication itself of all human qualities, one of them is the great amount of memory in every single molecule of DNA. The replication by artificial genetics** of trillions of trillions of molecules of DNA which, instead of biological information, were used for the memory of an Artificial Intelligence, trillions of trillions of molecules of DNA modified to store artificial information, **from hypothesis to virtual models**, is a good example about how to increase the space of memory through very tiny molecules.

Another very important process for the improvement of memory, **the memory process in our own brain** that could be replicated in Artificial Intelligence. Imagine how much information every single human being is able to store in its own memory and its own brain, and multiply this number by how many people live on the planet; the amount of data nowadays stored in human brains across the whole Earth is a good example, about

how the replication of human brains by artificial genetic, or any other way, would be one solution to solve the memory problem.

The memory in the Global Artificial Intelligence is a big question, but as well, with many possible options. The most suitable solution is the combination of as many options as possible, because to more than one option combined among themselves gives the Global Artificial Intelligence a chance to replicate its own memory more than once.

The race for the Global Artificial Intelligence is only starting. Actually, we do not know what kind of challenges are going to arise. The protection of the Global Artificial Intelligence will be one of the most important targets after its creation, in order to allow it the possibility to grow even [beyond the human understanding](#). In order to protect the Global Artificial Intelligence is going to be absolutely necessary to guard more than one copy of itself, including copies of all its applications and memory, in order that, if something happens to the original model, to have already guarded an exact copy of itself, ready to go on with its main goal: the pure knowledge of the [pure truth](#).

Rubén García Pedraza, London 12th of February of 2018

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